TeleWell TW-5614UL V.92 & V.90 Modem
User's Manual

Table of Contents

1. Introduction 3
2. Features 3
3. The Appearance of External Modem 4
    3.1 External Modem Front Panel 4
    3.2 External Modem Back Panel 5
4. Installing The External Modem 6
    4.1 Checking Your Components 6
    4.2 What Else You Need 6
    4.3 Connecting To The Telephone Line 6
    4.4 Connecting To You Telephone Set 6
    4.5 Verifying Your Connection 7
    4.6 Connecting Microphone And Speaker 7
    4.7 Configuring External Modem With Windows 95/98/ME/2000/NT4.0 8
    4.8 Tips On Configuring Your Communication Software 17
5. Executing Commands 18
6. S-Registers 20
    6.1 Reading An S Register Value 20
    6.2 Changing An S Register Value 20
    6.3 S Register Definitions 20
7. Response Sets 22
8. Specifications 25
Appendix A-1 FCC Notice 26
Appendix A-2 FCC Requirement 27
Appendix A-3 CE Mark Declaration 28
Appendix B: AT Command 29

1. Introduction

Congratulations on purchasing a state-of-the-art External Modem! Your External Modem incorporates the latest technological advancement for you to electronically communicate with other computers, information networks, fax machines or other External Modems. It embraces most of the industry and commercially popular standards to ensure compatibility with most equipment and application programs. The voice capability renders a wide range of application possibilities from a simple telephone-answering device to a sophisticated voice-mail system. The optional SVD feature allows you to talk and transmit data at the same time.

2. Features

1. Simultaneous Voice and Data
2. 56Kbps download speed from Internet
3. ITU-V.92 , V90 and K56Flex Dual Standards
4. Quick Connect
5. Modem-on-Hold
6. Call Waiting
7. Telephone Answering Machine (TAM) and Voice Mail Operations
8. Built-in Caller ID
9. 16550/A Compatible Enhanced UART for Sustained DTE Speed of 230.000 bps or 115,200bps

3. The Appearance of External Modem

3.1 External Modem Front Panel

LED Character Indicators

LED DESCRIPTION

MR Modem Ready Lights when power is applied to the modem. Flashes when the modem is in test mode

HS High Speed In Command mode, lights when DTE-to-modem speed is 4,800 bps or above.

AA Auto Answer Lights when the modem is in auto-Answer mode. Flashes when ring signal is received.

CD Carrier Detect Lights when carrier signal is received from remote modem.

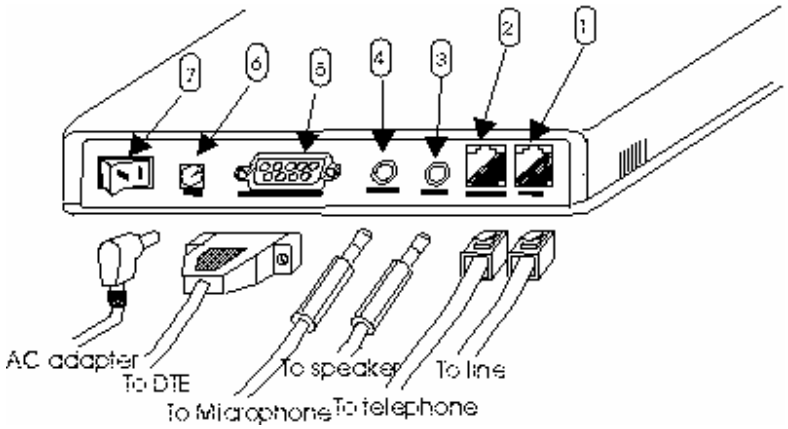
OH Off-Hook Lights when the modem picks up or answer the telephone line.

SD Send Data Flashes when the local DTE transmits data to the modem.

RD Receive Data Flashes when the local DTE receives data from the modem.

TR Terminal Ready Lights when the modem receives the DTR signal from the local DTE.

3.2 External Modem Back Panel



LINE	Line RJ-11 jack
PHONE	Telephone RJ-11 jack
SPK	Speaker mini-phone jack
MIC	Microphone mini-phone jack
SERIAL PORT	Serial DB-9 female connector
AC	AC jack
Power switch	Power on/off

4. Installing The External Modem

4.1 Checking Your Components

Unpack your External Modem and make sure you have the following items:

1. The External Modem.
2. A RS232C cable to connect your fax/modem to the serial port of Computer
3. A modular telephone cable to connect your External Modem to the telephone line.
4. A Power adapter.
5. Communication software (included driver and manual)

When you open your package, make sure all of the above items are included and not damaged. If you see that any components are damaged, please notify your dealer immediately.

4.2 What Else You Need

To complete your data communication system, you will need the following items:

1. Other communication software, if needed.
2. An active telephone line and telephone set (if you need to use a telephone with your modem).

4.3 Connecting To The Telephone Line

Use the following procedure to connect your External Modem to the telephone line:

1. Locate an available RJ-11 modular jack telephone outlet.
2. Take one end of the modular cord supplied with the External Modem and plug it into the **LINE** modular jack on the back of the External Modem.
3. Plug the other end of the modular cord into the modular jack on the wall outlet, as you would any modular telephone.

4.4 Connecting To You Telephone Set

Your External Modem also conveniently provides a second modular jack that lets you connect your telephone to the same telephone line that the External Modem is using. This lets you manually dial data calls or make voice calls when you are not using your External Modem. Also if you do not have speaker phone and microphone, handset of telephone set can function as an input/output device for voice to verify the connection.

Use the following procedure to connect your telephone to your External Modem:

1. Connect the telephone's modular cord into the **PHONE** jack on the back of your External Modem.
2. Lift your telephone's handset and listen for a dial tone.

4.5 Verifying Your Connection

Start a communication program and place the computer into terminal mode. Refer to your computer manual to find out the appropriate command to do so.

Then use the following procedure to verify your installation:

1. Type

AT[Enter]

If your system is operating properly, your External Modem sends an OK response to your screen and waits for your next command.

2. Use your communication software to prepare your computer to dial a call. Then type

ATDx *phone number***[Enter]**

where **x** is equal to **T** for touch-tone or **P** for pulse dialing. The *phone number* is your telephone number.

For example, if your External Modem is connected to the telephone line 555-2121 and touch-tone dialing is supported in your area, type

ATDT 5552121[Enter].

3. You should hear the busy signal and receive a **BUSY** response because the External Modem is calling itself.

4.6 Connecting Microphone And Speaker

You could either use a handset connected to the External Modem, or connect a microphone and a speaker for voice recording and playback.

NOTE:
Any commercially available microphone is usable.
For the speaker, any 8 ohm speaker rated around 1Watt can be driven directly by the audio output. An amplifier is required if you need a higher output volume.

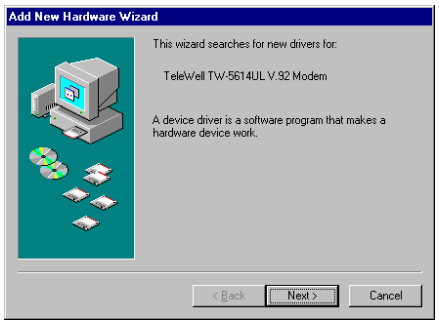
1. Connect the microphone to the mini-phone jack marked **MIC**.
2. Connect the speaker to the mini-phone jack marked **SPK**.

4.7 Configuring External Modem With Windows 95/98/ME/2000/NT4.0

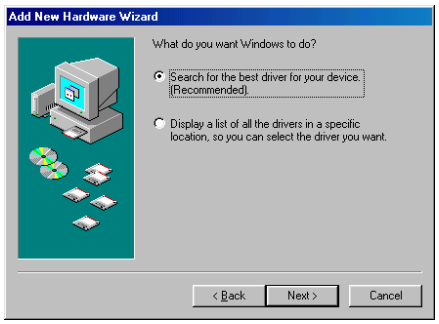
Windows 95/98:

Configuring external modem in Windows 95 is similar to Windows 98. Please refer to the installation below.

1. Restart the computer after connecting the modem to PC. When Windows detects the modem, the message "This wizard searches for new drives for: TeleWell TW-5614UL V.92 Modem" is displayed. Click **Next.**


Add New Hardware Wizard
This wizard searches for new drivers for:
TeleWell TW-5614UL V.92 Modem
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

2. To search for the best drivers for your device, click **Next**.


Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended).
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

3. Specify the location: F:\Drivers\Windows. (F is your CD-ROM.) Click **Next**.

Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
F:\Drivers\Windows
Browse...
< Back
Next >
Cancel

4. Windows will show the message ”Windows driver files search for the device “TeleWell TW-5614UL V.92 Modem” and the location of driver. Click **Next**.

Add New Hardware Wizard
Windows driver file search for the device:
TeleWell TW-5614UL V.92 Modem
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
F:\DRIVERS\WINDOWS\SCDSVS9X.INF
< Back
Next >
Cancel

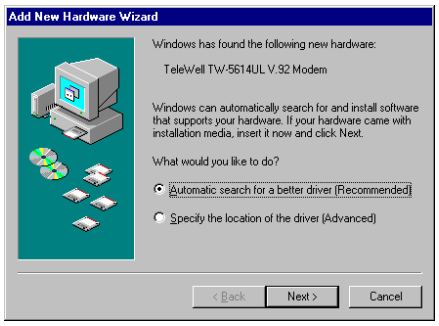
5. Windows has finished installing the software. Click **Finish** to complete installation.

Add New Hardware Wizard
TeleWell TW-5614UL V.92 Modem
Windows has finished installing the software that your new hardware device requires.
< Back
Finish
Cancel

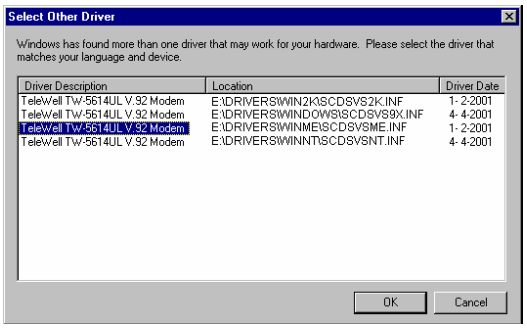
6. And then Windows will complete other installation automatically.

Windows ME:

1. Restart the computer after connecting modem to PC. When Windows detects the modem, the message "Windows has found the following new hardware: TeleWell TW-5614UL V.92 Modem" is displayed. Select “Automatic search for a better driver” or ”Specify the location of the driver”, then click **Next**.


Add New Hardware Wizard
Windows has found the following new hardware:
TeleWell TW-5614UL V.92 Modem
Windows can automatically search for and install software that supports your hardware. If your hardware came with installation media, insert it now and click Next.
What would you like to do?
Automatic search for a better driver (Recommended)
Specify the location of the driver (Advanced)
< Back
Next >
Cancel

2. Select TeleWell TW-5614UL V.92 Modem whose location is E:\DRIVERS\WINME (E is your CD-ROM) and then click **OK**.



3. Windows has finished installing the new device. Click **Finish** to complete installation. And then Windows will complete the installation of wave device automatically.

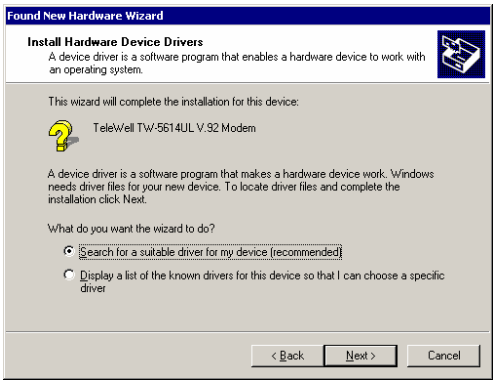
Add New Hardware Wizard
TeleWell TW-5614UL V.92 Modem
Windows has finished installing the software you selected that your new hardware device requires.
< Back
Finish
Cancel

Windows 2000:

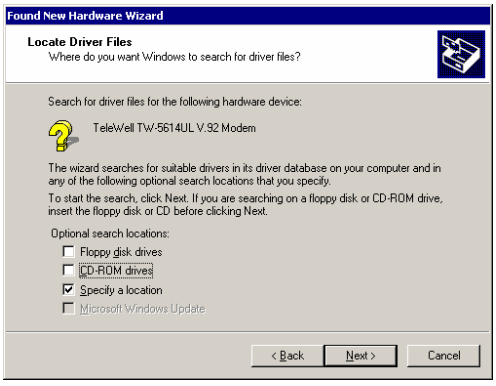
1. Restart the computer after connecting the modem to PC. When Windows detects the modem, the wizard will help you to install the new device. Click **Next** to begin installation.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

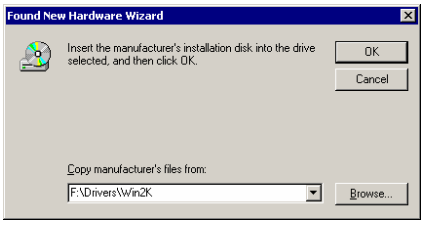
2. Select “Search for a suitable driver for my device”. Then click **Next**.


Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
TeleWell TW-5614UL V.92 Modem
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

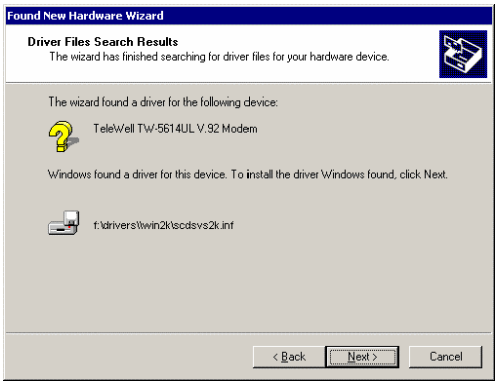
3. Select “Specify a location”. Then click **Next**.


Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
TeleWell TW-5614UL V.92 Modem
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

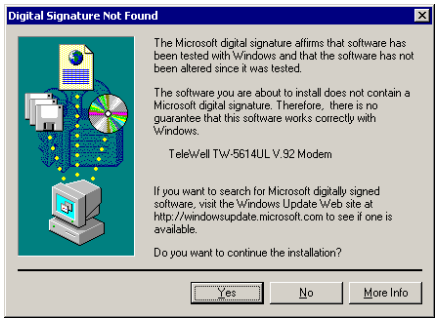
4. Choose **Browse** to specify the location: F:\Drivers\Win2k. (F is your CD-ROM.) Then click **OK**.



5. Wizard found the correct driver for the new device. Then click **Next**.


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
TeleWell TW-5614UL V.92 Modem
Windows found a driver for this device. To install the driver Windows found, click Next.
f:\drivers\win2k\scdsvs2k.inf
< Back
Next >
Cancel

6. To continue the installation, click **Yes**.

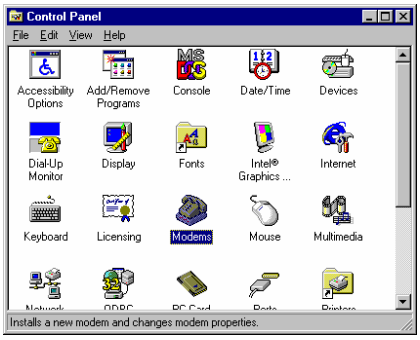

Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
TeleWell TW-5614UL V.92 Modem
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

7. Windows has finished installing the software. Click **Finish** to complete installation.

Found New Hardware Wizard
Completing the Found New Hardware Wizard
TeleWell TW-5614UL V.92 Modem
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

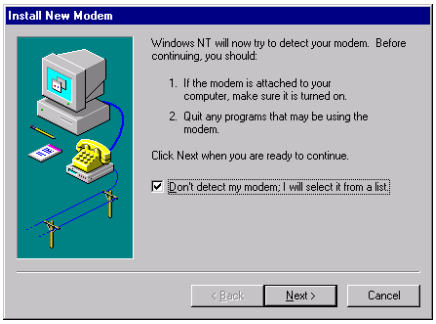
Windows NT4.0:

1. Double click “**Modems**” from **Start→Setting→Control Panel**.

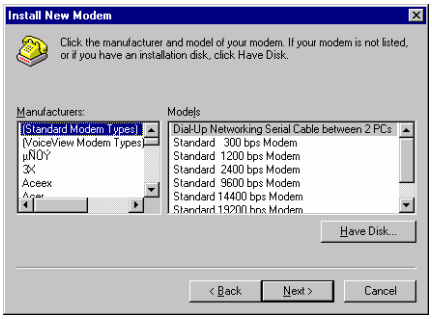


2. Click **Add** to add a new modem.

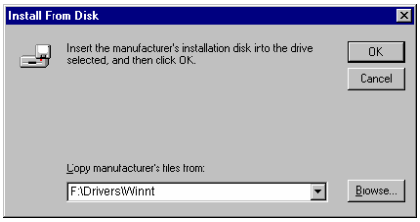
3. Check ”Don’t detect my modem; I will select it from a list” and then click **Next**.


Install New Modem
Windows NT will now try to detect your modem. Before continuing, you should:
1. If the modem is attached to your computer, make sure it is turned on.
2. Quit any programs that may be using the modem.
Click Next when you are ready to continue.
Don't detect my modem; I will select it from a list.
< Back
Next >
Cancel

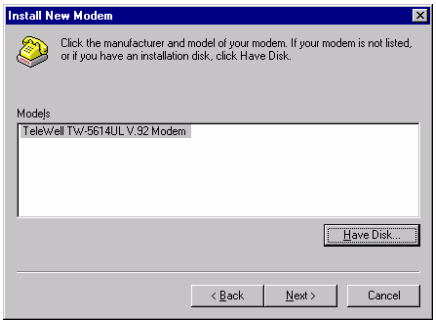
4. Click **Have Disk**.


Install New Modem
Click the manufacturer and model of your modem. If your modem is not listed, or if you have an installation disk, click Have Disk.
Manufacturers:
Models
(Standard Modem Types)
(VoiceView Modem Types)
Dial-Up Networking Serial Cable between 2 PCs
Standard 300 bps Modem
Standard 1200 bps Modem
Standard 2400 bps Modem
Standard 9600 bps Modem
Standard 14400 bps Modem
Have Disk...
< Back
Next >
Cancel

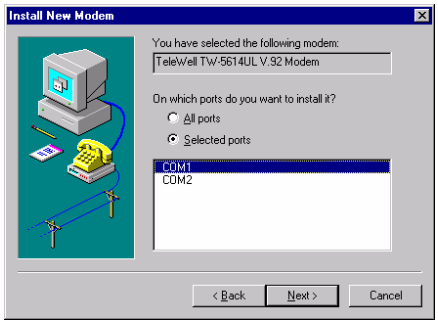
5. Indicating the path: F:\Drivers\WinNT (F is your CD-ROM) and then click **OK**.



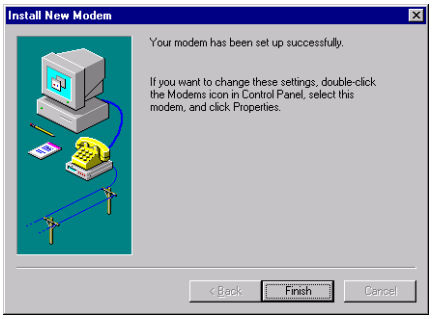
6. Select the model of your modem and then click **Next**.


Install New Modem
Click the manufacturer and model of your modem. If your modem is not listed, or if you have an installation disk, click Have Disk.
Models
TeleWell TW-5614UL V.92 Modem
Have Disk...
< Back
Next >
Cancel

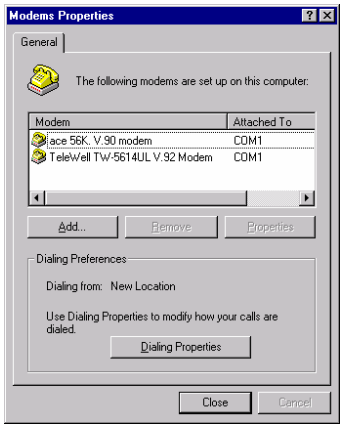
7. Select the COM port that you connect modem to your PC and then click **Next**.



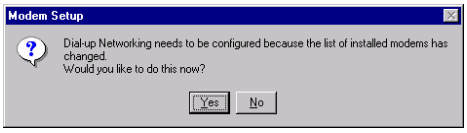
8. Windows has finished installing the software. Click **Finish** to complete installation.


Install New Modem
Your modem has been set up successfully.
If you want to change these settings, double-click the Modems icon in Control Panel, select this modem, and click Properties.
< Back
Finish
Cancel

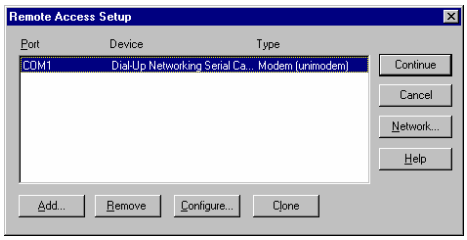
9. You can see the modem set up on your PC. Click **Close** to go into next step.



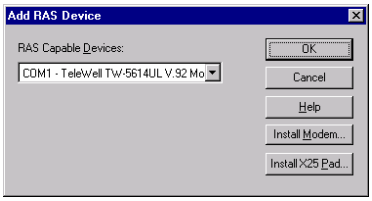
10. Click **Yes** to configure Dial-up Network.


Modem Setup
Dial-up Networking needs to be configured because the list of installed modems has changed.
Would you like to do this now?
Yes
No

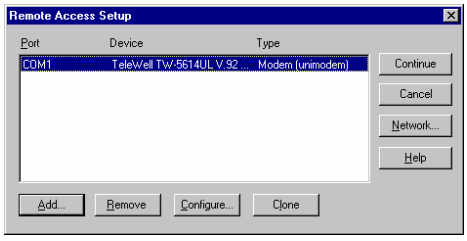
11. Click **Add** to add the device you installed.



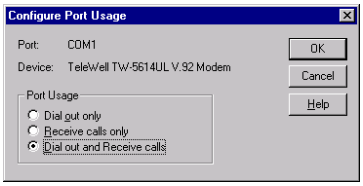
12. Select the correct device you want to use and then click **OK**.



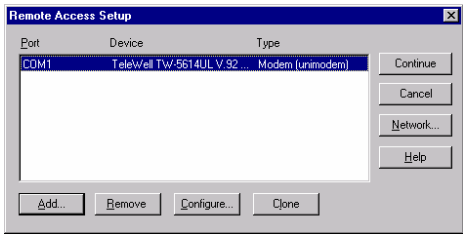
13. Click **Configure** to select port usage.



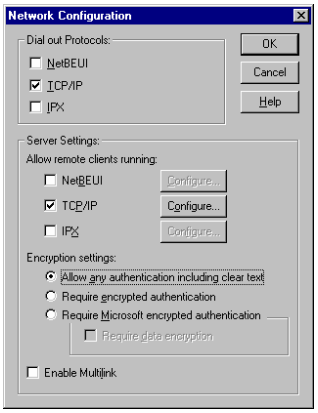
14. Select the port usage and then click **OK**.



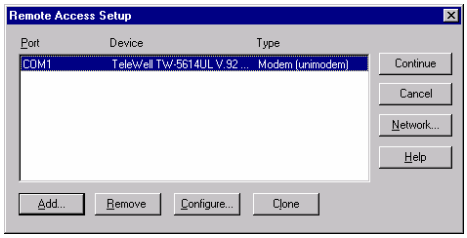
15. Click **Network** to select network configuration.



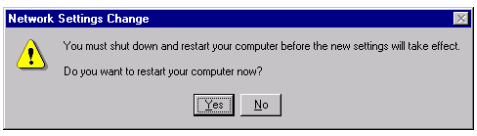
16. Select network configuration and then click **OK**.



17. Click **Continue** to go into next step



18. Click **Yes** to restart your PC.


Network Settings Change
You must shut down and restart your computer before the new settings will take effect.
Do you want to restart your computer now?
Yes
No

4.8 Tips On Configuring Your Communication Software

Your External Modem uses the most up-to-date industry and commercially popular standards to ensure functional compatibility with most communication software. During initial set-up of the communication software, it will normally prompt you to define the type of External Modem you are using. Following is a general guideline to the device type you should choose.

NOTE:
The device type only defines the protocol by which your software will communicate with your External Modem and does not set nor limit the speed.

1. For modem device type, choose 'Hayes V.32' or 'Hayes Compatible 2400 Baud' modem.
2. For the baud rate. Choose any speed between 38,400 to 115,200.Your External Modem will automatically adjust to the best transmission speed after successfully connecting with a remote External Modem.
3. Many communication software uses the modem response to control program flow. Make sure that the software is set to recognize a **CONNECT 28800** response. If this does not work, set the program to simply recognize just the **CONNECT** response without any baud rate information.
4. There are three flow control mode: none, hardware (CTS/RTS) or software (XON/XOFF). Set your software to use either hardware or software flow control. If set to none, the communication software will not be able to detect a buffer overflow and result in transmission errors.
5. For fax device type, choose '**Class 1**'.
6. For fax speed, choose 'automatic' or 'fastest speed'. Your External Modem will automatically adjust to be best transmission speed after successfully connecting with a remote fax machine or another External Modem.
7. Make sure that you have correctly set all the other parameters required by the software to operate successfully. Refer to the manual that came with your communication software for details.

5. Executing Commands

If you will be using a communication software program to make data calls, you will probably not need to type commands, because your software program will handle these tasks for you. Similarly, you will probably not see the responses because your software program may intercept them. However, if you perform data activities directly with your External Modem, you will find the format for typing External Modem commands and fax/ modem response helpful.

Using commands, you can have your External Modem perform a variety of activities, such as dialing or answering a data call or sending a fax. In order to send commands to your External Modem, you must access the modem in a terminal mode which is provided by most communication software. To enter a command line, type:

ATccpp[Enter]

where AT must precede every command line (except when you type the A/ command).

cc any of the commands available, described in succeeding sections.
pp any parameters that is required by the command.

If you make a mistake while typing a command, press the Backspace key to delete the error.

To make a command line easy to read, you can insert spaces parentheses, hyphens, and other punctuation in your command line. For example:

AT M3 DT 9, 1(818)555-1234

Your External Modem ignores spaces and punctuation marks when executing a command line, but these characters apply to the 40 characters limit.

A command line can contain up to 39 characters. If you want to type more than 39 characters on a command line, type a regular command line (up to 39 characters long) and end it with a semicolon as the last character. When you press Enter, your External Modem executes the commands and returns to command mode, so you can type your next command line.

For your convenience, the last command line you execute remains stored in the modem's memory until you type a new command line and press the Enter key. If you want to re-execute the last command, type
A/

The A/ command need not be prefixed by the 'AT' characters or ended with the [Enter] key.

If a command requires a parameter such as 0 and 1, the parameter is identified as n in the left column and described in the right column.

IMPORTANT:
Each command, except for '+++' and 'A/', must be preceded by 'AT' and executed when you press the [Enter] key. To review the format used to send External Modem commands, refer to Section of this manual.

6. S-Registers

Your External Modem has S-registers that affect various operating characteristics. The registers let you obtain information about the External Modem, and let you test the External Modem. Each S-Register has a factory-set value, which you can read or change to fit your particular requirements.

6.1 Reading An S Register Value

1.To read the current value of an S-Register, type:

ATSr?[Enter]

Where r is an S-Register number.

The External Modem responds with decimal value of the S-Register, in three-digit format, followed by **OK**.

2. To read values from more than one S-Register, type:

ATSr?Sr?[Enter]

where r specify the different S-Register numbers.

For example, to read the value of Register **S0** (number of rings before answering) and **S1** (incoming ring count), type:

ATS0?S1?[Enter]

6.2 Changing An S Register Value

To change an S-Register value, type

ATSr=n[Enter]

Where r is the S-register number.
n is the value you want to assign to that S-register.

6.3 S Register Definitions

S0 Number of Rings to Auto-Answer
The number of rings the modem waits for before it auto answers.
Range 000-255 (rings)
Default 000 (Country dependent)

S6 Wait Time before Blind Dialing
The time to pause after off-hook before blind dialing.
Range 002-255
Default 003 (Seconds,Country dependent)

S7 Waiting Time before Carrier Detect

The time to wait for a carrier from the remote modem before hanging up.
Range 001-255
Default 060 (seconds,Country dependent)

S8 Pause Time For Dial Delay

The time to pause for the pause dial modifier, "Comma".
Range 000-255
Default 002 (seconds)

S9 Carrier Detect Response Time

The time a signal is detected an qualified as a carrier. This timing lets your modem ignore spurious signals that are the same frequency as the carrier. Higher S9 values reduce the chance of a carrier being detected.
Range 001-255
Default 006 (0.6 seconds)

S10 Lost Carrier To Hang Up Delay

The time the modem waits before hanging up for carrier loss.
Range 001-255
Default 014 (1.4 seconds)

S11 DTMF Tone Duration

The time for DTMF tone dialing and the time between the tone spacing.
Range 050-255
Default 085 (ms, Country dependent)

7. Response Sets

When you send a command to your External Modem, it sends a response to your computer. For example, if you type **AT[Enter]**, the External Modem should respond with **OK**. The External Modem gives out different responses for the different tasks that it performs. Communication software use these responses to control the flow of the program. The responses that are intercepted by the communication program are normally not displayed on your computer screen. This section describes the External Modem responses returned by the External Modem when you communicate directly with the External Modem.

There are five X response sets: 0, 1, 2, 3 and 4. They define certain dialing characteristics and how the External Modem handles dial tones and busy signals, as described in the following sections. The response classifications are designed to meet the requirements for various types of operation and application. You can select an X response set by using the Xn command.

Aside from the X response sets, extended responses are also available that shows the carrier speed, compression method and the error-correction protocol as described in the following table. You can enable the extended responses by using the Wn command.

External Modem responses can appear as words or numbers. Your External Modem is set up to return word responses. Word responses are followed by a carriage return and line feed. If your External Modem is operating under an application that handles character strings inefficiently or cannot handle them at all, you can use the V0 command to switch to numeric External Modem responses. Numeric responses are followed by a carriage return only.

If you do not want to receive External Modem responses at all, you can use **Q1** command to disable them.

The following table lists and describes the available response codes, where x means that result word/code is available:

WORD	CODE	n Value in ATXn Command				
		0	**1**	**2**	**3**	**4**
OK	00	x	x	x	x	x
CONNECT	01	x	x	x	x	x
RING	02	x	x	x	x	x
NO CARRIER	03	x	x	x	x	x
ERROR	04	x	x	x	x	x
CONNECT 1200	05		x	x	x	x
NO DIALTONE	06			x	x	x
BUSY	07				x	x
NO ANSWER	08	x	x	x	x	x
CONNECT 600	09		x	x	x	x
CONNECT 2400	10		x	x	x	x
CONNECT 4800	11		x	x	x	x
CONNECT 9600	12		x	x	x	x

CONNECT 7200	13		x	x	x	x
CONNECT 12000	14		x	x	x	x
CONNECT 14400	15		x	x	x	x
CONNECT 19200	16		x	x	x	x
CONNECT 38400	17		x	x	x	x
CONNECT 57600	18		x	x	x	x
CONNECT 115200	19		x	x	x	x
CONNECT 230400	20	x	x	x	x	x
CONNECT 75TX / 1200RX	22		x	x	x	x
CONNECT 1200TX / 75RX	23		x	x	x	x
DELAYED	24					x
BLACKLISTED	32					x
FAX	33	x	x	x	x	x
DATA	35	x	x	x	x	x
CARRIER 300	40	x	x	x	x	x
CARRIER 1200/75	44	x	x	x	x	x
CARRIER 75/1200	45	x	x	x	x	x
CARRIER 1200	46	x	x	x	x	x
CARRIER 2400	47	x	x	x	x	x
CARRIER 4800	48	x	x	x	x	x
CARRIER 7200	49	x	x	x	x	x
CARRIER 9600	50	x	x	x	x	x
CARRIER 12000	51	x	x	x	x	x
CARRIER 14400	52	x	x	x	x	x
CARRIER 16800	53	x	x	x	x	x
CARRIER 19200	54	x	x	x	x	x
CARRIER 21600	55	x	x	x	x	x
CARRIER 24000	56	x	x	x	x	x
CARRIER 26400	57	x	x	x	x	x
CARRIER 28800	58	x	x	x	x	x
CONNECT 16800	59		x	x	x	x
CONNECT 21600	61		x	x	x	x
CONNECT 24000	62		x	x	x	x
CONNECT 26400	63		x	x	x	x
CONNECT 28800	64		x	x	x	x
COMPRESSION: CLASS 5	66	x	x	x	x	x
COMPRESSION: V.42bis	67	x	x	x	x	x
COMPRESSION: NONE	69	x	x	x	x	x
PROTOCOL: NONE	70	x	x	x	x	x
PROTOCOL: LAMP	77	x	x	x	x	x
CARRIER 31200	78	x	x	x	x	x
CARRIER 33600	79	x	x	x	x	x
PROTOCOL: ALT	80	x	x	x	x	x
PROTOCOL: ALT-CELLULAR	81	x	x	x	x	x
CONNECT 33600	84		x	x	x	x
CONNECT 31200	91		x	x	x	x
CARRIER 32000	150	x	x	x	x	x
CARRIER 34000	151	x	x	x	x	x
CARRIER 36000	152	x	x	x	x	x
CARRIER 38000	153	x	x	x	x	x
CARRIER 40000	154	x	x	x	x	x

CARRIER 42000	155	x	x	x	x	x
CARRIER 44000	156	x	x	x	x	x
CARRIER 46000	157	x	x	x	x	x
CARRIER 48000	158	x	x	x	x	x
CARRIER 50000	159	x	x	x	x	x
CARRIER 52000	160	x	x	x	x	x
CARRIER 54000	161	x	x	x	x	x
CARRIER 56000	162	x	x	x	x	x
CONNECT 32000	165	x	x	x	x	x
CONNECT 34000	166	x	x	x	x	x
CONNECT 36000	167	x	x	x	x	x
CONNECT 38000	168	x	x	x	x	x
CONNECT 40000	169	x	x	x	x	x
CONNECT 42000	170	x	x	x	x	x
CONNECT 44000	171	x	x	x	x	x
CONNECT 46000	172	x	x	x	x	x
CONNECT 48000	173	x	x	x	x	x
CONNECT 50000	174	x	x	x	x	x
CONNECT 52000	175	x	x	x	x	x
CONNECT 54000	176	x	x	x	x	x
CONNECT 56000	177	x	x	x	x	x
FCERROR	+FC					

Following are descriptions of the different sets of External Modem responses:

X0 The **X0** response set consists of the first five responses as well as the **NO ANSWER** response.

X1 The **X1** response set consists of the first five responses as well as **NO ANSWER** and all **CONNECT** xxx responses.

X2 The **X2** response set consists of first seven responses as well as the **NO ANSWER** and all **CONNECT** xxx responses.

X3 The **X3** response set consists of the first five responses as well as the **BUSY, NO ANSWER** and all **CONNECT** xxx responses.

X4 The **X4** response set is the factory-default response set. It consists of all the responses.

W0 Extended responses is disabled. With **W0**, all **CONNECT** responses reports the DTE speed.

W1 The modem will send **CARRIER** and **PROTOCOL** responses. The **CONNECT** response shows the DTE speed.

W2 The modem will send **CARRIER** and **PROTOCOL** responses. The **CONNECT** response shows the DCE speed rather than the DTE speed.

8. Specifications

MODEM OPERATION

Line Rate	0.3, 1.2, 2.4, 4.8, 7.2, 9.6, 12, 14.4, 16.8, 19.2, 21.6, 24, 26.4, 28.8, 31.2, 33.6, 56 Kbps
DTE Rate	230.000 bps maximum
Operation	Half or full-duplex over 2-wire dial-up line, Asynchronous
Linking	Auto dial/answer, auto bauding, MNP10 auto fall-back/forward
Flow Control	RTS/CTS, XON/XOFF
Compatibility	Bell 103; 212A, ITU-T V.21; V.22A/B; V.23, V.22bis; V.32; V.32bis; V.34; **V.90, K56flex, V.92**
Error Correction	ITU-T V.42, MNP4 (auto-match)
Data Compression	ITU-T V.42bis, V.44, MNP5 (auto-match)
Receive Sensitivity	-38 dBm
Command Set	AT Command and Escape sequence
Memory	2 configuration profiles, 4 sets digital telephone number
Diagnostics	Power on self-test, V.54 loop test

VOICE OPERATION

Operation	Analog Simultaneous Voice and Data(ASVD), Telephone Answering Machine(TAM), Voice mail system
Sampling Rate Voice	7.2 KHz using 2, 3 or4 bits ADPCM, 11.025 KHz linear PCM
Audio Span	ITU-T V.61 modulation (ASVD)
FDSP	Full-duplex speakerphone mode, Acoustic and line echo cancellation, microphone gain/muting, speaker volume control/muting
ITU-T V.80	Synchronous access modes support based communication protocols

FAX OPERATION

Speed	14400 bps
Compatibility	Group 3 with T.30 protocol over ITU-T V.17; V.21 ch2, V.27ter; V.29
Command Set	TR-30 protocol

GENERAL

1. Up to 56K Data (download) for both K56flex and V.92 ISP
2. 2 RJ-11 phone jacks for line and telephone, 2 Audio jacks for speaker and microphone
3. H.324 (Video conferencing)
4. 14.4K Fax
5. Dimensions: 1.25”H x 6.2”W x 4.7”D

Appendix A-1 FCC Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient of relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio / TV technician for help.

This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to insure compliance. This statement can be deleted if unit was not tested with shielded cables.

The manufacture is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference that may cause undesired operation.

Appendix A-2 FCC Requirement

This equipment complies with Part 68 of the FCC Rules. On the base unit of this equipment is a label that contains, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. If requested, this information must be given to telephone company.

The REN is useful in determining the quantity of devices you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most, but not all area, the sum of the REN's of all devices connected to one line should not exceed five (5). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

If your equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complain with the FCC. Your telephone company may make changes in its facilities, equipments, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

The equipment may not be used on coin service by the telephone company. Connection to party lines is subject to state tariffs.

Appendix A-3 CE Mark Declaration

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Appendix B: AT Command

A Go off-hook and attempt to answer a call

&Cn Control Carrier Detect (CD) Signal
&C0 CD override
&C1 Normal CD operations

Dn Dial
0-9 DTMF digits 0 to 9
P Pulse (rotary) dial
T Tone dial
W Wait for second dial tone
^ Toggles calling tone enable/disable

&Dn DTR Option
&D0 Ignore an on-to-off transition of DTR
&D1 Switch to on-line command mode without disconnection
&D2 Normal DTR operations

&F Load Factory Configuration(Profile)

Hn Disconnect (Hang-up)
H0 Hang up (go on-hook)
H1 Go off-hook

In Identification
I0 Report product code
I2 Report "OK" or "ERROR"
I3 Report driver revision
I4 Report OEM defined identifier string

Mn Speaker Control
M0 Speaker is always off
M1 Speaker ON until CONNECT
M2 Speaker is always on
M3 Speaker off during dialing and receiving carrier and turn speaker on during answering

On Return to On-Line Data Mode
O0 Go on-line
O1 Go on-line and retrain